synchronization source is detected, the base station continues to determine whether a beacon message is acquired on the beacon slot or non-synced handset traffic is detected on the blank slot at step **1004**. If an out of phase handset is detected at step **1008**, the base station migrates slowly toward the other source and syncs on the handset as a slave at step **1010**. The base station then determines if the same sync distribution continues to be received at a step **1012**. If the same sync distribution continues to be received, the base station continues to sync on the other handset as a slave at step **1010**.

However, if a new sync distribution is received at step **1012**, the base station determines whether a beacon message is acquired on the beacon slot or handset traffic is detected on the blank slot at step **1004**. If a beacon message is detected on the beacon slot and no non-synched handset traffic is detected on the blank slot at a step **1014**, the base station syncs on the beacon slot as a slave at a step **1016**. If the original sync distribution continues to be received at a step **1018**, the base station continues to sync on the beacon slot as a slave. However, if the sync distribution does not continue, the base station monitors for an out-of-phase sync source at step **1008**.

If the base station detects non-synched handset traffic on the blank slot, but no beacon on the beacon slot at a step **1020**, the base station syncs on the blank slot as a slave at a step **1022**. If the original sync distribution continues to be received at a step **1024**, the base station continues to sync on the blank slot as a slave and retransmits on the beacon slot. However, if the original sync distribution is not received, the base station monitors for out-of-phase synchronization source at step **1008**.

Finally, if a beacon message is detected on the beacon slot and interfering handset traffic is detected on the blank slot at step **1025**, the base station syncs on the beacon slot as a slave at a step **1026**. If the original sync distribution continues to be received at step **1028**, the base station continues to sync on the beacon slot as a slave. Otherwise, the base station monitors for an out-of-phase synchronization source at step **1008**.

In summary, an alternate embodiment discloses base stations which monitor a beacon signal on a beacon slot or handset traffic on a blank slot to detect an unsynchronized source. If no beacon signal is detected on the beacon slot and no handset traffic is detected on the blank slot, the base station functions as a master base station. If the base station detects a beacon signal on the beacon slots or handset traffic on the blank slot, the base stations synchronizes to that base station. If handset traffic was detected, the base station also retransmits a beacon signal on the beacon slot to enable another base station to synchronize to it. If a certain base station detects a beacon on the beacon slot and handset traffic on the blank slot, the base station will synchronize to one of the base stations, preferably the base station detected on the beacon slot. The other of the two base stations will then detect that the certain base station is out of sync and will sync to that base station. Accordingly, all of the base stations of separate chains will be synchronized.

Turning now to FIG. **11**, a preferred method for achieving or maintaining synchronization by use of a DPLL is disclosed. In particular, a slot is established as a sync source at a step **1104**.

The base station will then determine whether a beacon is received at a step **1106**. If a beacon is received, the base station will then determine whether the beacon is received early at a step **1108**. If the beacon is received early, the base station will transmit a frame having a guard band which has N−1 bits at a step **1110**. If however the beacon is not received early, the base station will transmit a guard band having N+1 bits. While the method of FIG. **11** is one method for maintaining synchronization, it will be understood that other methods which are known in the art could be employed to maintain synchronization.

In summary, the present invention provides synchronous communication in a communication environment wherein multiple base stations are adapted to operate on the same frequencies. In particular, base stations such as residential base stations must be coordinated to minimize interference with other base stations which otherwise operate independently. According to the present invention, each base station operating in a system will determine whether another base station operating on the same frequencies is within range. One of the base stations will assume a role as a master and the remaining base station will then synchronize to the master base station. Preferred methods for synchronizing the base stations, including signaling protocols and collision avoidance techniques, are also disclosed.

While specific embodiments are described by way of example in the above description, modifications and alternate embodiments fall within the spirit and scope of the present invention. The present invention should be limited only by the following claims.

We claim:

1. A method for providing synchronous communication in a communication system having a plurality of base stations adapted to operate within range of one another, said method comprising the steps of:

detecting a beacon signal from a first base station and a second base station at a third-base station;

synchronizing said third base station to said first base station;

detecting, at said second base station, a beacon signal from a third base station; and

synchronizing said second base station to said third base station.

2. The method for providing synchronous communication according to claim **1** wherein said step of detecting a beacon signal from said third base station comprises detecting handset traffic from a handset associated with said third base station.

3. The method for providing synchronous communication according to claim **1** wherein said step of detecting said beacon signal from said third base station includes detecting handset traffic on a blank slot of a message frame associated with said third base station.

4. A method for providing synchronous communication in a communication system having a plurality of base stations adapted to operate within range of one another, said method comprising the steps of:

detecting a beacon signal from each of a first base station and a second base station at a third base station;

synchronizing said third base station to said first base station;

generating a beacon signal at said third base station;

detecting, at said second base station, said beacon signal generated at said third base station; and